REMARKS

In accordance with the foregoing, claims 13, 21 and 27 have been cancelled and claims 12, 14, 16-20, 25, 26, 28 and 29 have been amended. Claims 12, 14-20, 22-26 and 28-30 are pending and under consideration.

The amendments to claims 12 and 28 simply clarify the previous language of these claims. As such, antecedent support should be self apparent. The features are described throughout the application and the claims as filed. In case of questions, the Examiner is referred to paragraphs [0012]-[0014] of the Substitute Specification and Figs. 1 and 2. Antecedent support for the claim 29 changes can be found throughout the application and in Figs. 1 and 2. Paragraph [0005] of the Substitute Specification describes that the access point may have a smaller diameter coverage area than usual mobile radio cells. Paragraph [0004] of the Substitute Specification describes the frequency of band for usual mobile radio cells. Paragraph [0007] of the Substitute Specification describes the frequency band of the access point.

In item 3, the Examiner continues to reject claims 29 and 30 under 35 U.S.C. §112, first paragraph. As recognized by the Examiner in item 7, applicants previously cited paragraphs [0033] and [0034] of the Substitute Specification. In response, the Examiner asserts that paragraphs [0033] and [0034] of applicant's publication does not disclose the language in question. This is of course because the paragraph numbering in the Substitute Specification is different from the paragraph numbering in the published application. Applications have checked the Patent Office database and confirmed that the Substitute Specification was timely filed and recorded. However, to avoid further confusion, paragraphs [0033] and [0034] of the Substitute Specification are reprinted below.

> **[0033]** In order to determine the path between the mobile station MN11 and the radio access point AP, the mobile station MN11 sends a request to the base station BS. As a result, this station then determines a suitable path between the mobile station MN11 and the radio access point AP. The method, which is used by the base station BS in order to determine the path taking the current network topology as a starting point, is not relevant to understanding the method. In the example in Figure 1, the path determined by the base station BS comprises the mobile stations MN12, MN21 and MN23. Because the mobile stations MN12, MN21 and MN23 of the path are neighboring mobile stations in each case, information can be transmitted over the path to the radio access AP by the mobile station MN11 about the mobile stations MN12, MN21 and MN23 of the path.
>
> **[0034]** After the base station BS has determined the mobile stations MN12, MN21 and MN23 of the path, suitable information is transmitted about the path to these mobile stations MN12, MN21 and MN23 so that a communication between the mobile station MN11 and the radio access point AP can take place. For this purpose, the base station BS transmits the identification information of the path in the form of a path

number to the mobile station MN11, the mobile stations MN12, MN21 and MN23 as well as the identification information of the path in the form of a path number to the radio access point AP. In addition, the identification information of that mobile station is transmitted to those mobile stations, to which it is to route the data during communication between the mobile station MN11 and the radio access point AP: the identification information of the mobile station MN12 is sent to the mobile station MN11, the identification information of the mobile station MN21 is transmitted to the mobile station MN12, the identification information of the mobile station MN23 is sent to the mobile station MN21 and the identification information of the receiver mobile station is sent to the mobile station MN23, i.e. the radio access point AP. Finally, the mobile stations MN11, MN12, MN21, MN23 receive, in addition to the identification information of the next mobile station in each case, the information about the subbands assigned to this station's closest mobile station by the base station BS. In this way, the mobile station MN11 receives the information about the subbands of the mobile station MN12, the mobile stations MN12 about the subbands of the mobile stations MN21, the mobile station MN21 about the subbands of the mobile stations MN23 and the mobile station MN23 about the subbands of the radio access point AP.

Continuing with claim 29, this claim and the other claims are rejected as being obvious over U.S. Patent No. 6,985,476 to Elliott et al. in view of U.S. Patent Publication No. 2004/0146013 to Song et al. and U.S. Patent No. 6,549,543 to Shin. The Examiner is requested to note the patent number for Elliott et al. Independent claim 29 has been amended as follows:

> receiving a request at a base station from the first radio station, to establish a communication path to the radio access point, the base station being part of a radio installation, the base station having a larger coverage area than the radio access point, the base station operating using a first frequency band and the radio access point operating using a second frequency band different from the first frequency band;
>
> generating path information at the radio installation after receiving the request from the first radio station, the path information being generated by assigning at least one intermediate radio station to the path and assigning a frequency sub-band to the at least one intermediate radio station for communication on the path; ~~and~~
>
> transmitting the path information from the base station to the at least one intermediate radio station; and
>
> conveying information from the first radio station to the access point via the path.

According to claim 29, the path information originates from a base station having a larger coverage area than, and operating on a different frequency band from, a radio access point. As described previously, the main purpose of Elliott et al. is unrelated to route determination. Column 4, lines 28 - 30 describe that the nodes may be implemented "as ad-hoc routers (or other equipment to perform routing operations)." In this excerpt, "ad-hoc" is used to mean "if needed."

Spanning column 4, line 28 through column 5, line 60, Elliott et al. mentions an SPF routing protocol, a DV routing protocol, a MANET routing protocol and an AODV routing

protocol. As evidence that these protocols are different from the claimed invention, applicants enclose the following 6 documents:

1. "How SPF Works," http://cisco-press-traffic-engineering.org.ua/1587050315/ch04lev1sec1.html (Downloaded May 13, 2011), 6 pages

2. J. Moy, "OSPF Version 2," Proten, Inc. (1991), 5 pages

3. "Distance-vector routing protocol," Wikipedia (Downloaded May 13, 2011), 5 pages

4. C. Perkins et al., "Ad hoc On-Demand Distance Vector (AODV) Routing," The Internet Society (2003), 10 pages

5. "MANET routing protocols," http://www.olsr.org/docs/report_html/node15.html (Downloaded May 13, 2011), 1 page

6. S. Corson et al., "Mobile Ad hoc Networking (MANET): Routing Protocol Performance Issues and Evaluation Considerations," The Internet Society (1999), 11 pages

According to claim 29, routing information originates from a base station having a larger coverage area than, and a different frequency band from, a radio access point. There is nothing in Elliott et al. to suggest the features of claim 29. In fact, Elliott et al. is inconsistent with claim 29. For example, column 4, lines 31-34 describe that the nodes/routers may utilize various algorithms and wireless protocols in order to discover other nearby routers, for neighboring relationships with these routers and to forward data packets through the network. This discovery process is described in more detail at column 4, line 59 through column 5, line 11, which provides as follows (emphasis added):

> AODV applies algorithms similar to DV in an ad-hoc wireless network. In general, upon receiving a data packet with an unresolved destination, AODV may have a node, such as node 108, may broadcast a route request message to its neighbors, e.g., nodes 110 and 112. The route request message may include a last sequence number for data packet sent to that destination. The route request message may be then sent through the network 106 until it reaches a node, e.g., node 118, that has a route to the destination. Each node may also create a reverse route for itself back to a data packet's source, e.g., host 100.
>
> When the route request message reaches node 118, node 118 may then generate a route reply that contains the number of hops necessary to reach the destination and a sequence number for the destination most recently seen by the router generating the reply. Each router that participates in forwarding this reply back toward the originator of the route request then creates a forward route to the destination. However, each router remembers only the next hop and not the entire route.

Elliott et al. needs to broadcast route request messages because Elliott et al. does not use the claimed method. Referring to the attached documents (some of which are clearly not prior art), it is submitted that the other routing algorithms are deficient in a manner similar to the AODV algorithm described in Elliott et al. For example, reference 5 describes MANET as an adaptation of the other protocols.

Claims 12 and 28 contain different, but somewhat similar language. For example, claim 12 recites:

> dividing a frequency band into a plurality of frequency subbands for communication between the radio stations, ~~-~~with at least one frequency subband being assigned to each radio station, the frequency band being divided at a~~the~~ radio installation;
>
> determining ~~at least a portion of~~ the path at the~~a~~ radio installation upon request of the first radio station, the path being determined by identifying links from the first radio station to the second radio station via at least one intermediate radio station and assigning a frequency subband to each link on the path;
>
> transmitting first path identification information, from the base station ~~radio installation~~ to the first radio station, the first path identification information describing a first link, which extends from the first radio station, first path identification information specifying the intermediate radio station connected to the first radio station via the first link;
>
> transmitting from the base station ~~radio installation~~ to one or more intermediate radio station~~: •~~ the later path identification information, the later path identification information describing a later link from the intermediate radio station, the later path identification information specifying (a) a next adjacent radio station connected to the intermediate radio station via the later link, ~~• Information identifying~~ and (b) the frequency subband assigned to the later link~~an other intermediate radio station and information identifying the subband assigned to it and/or identifying the first radio station and information identifying the subband assigned to it and/or identifying the second radio station and information identifying the subband assigned to it~~.

Like claim 29, claim 12 requires that the path identification information be transmitted from the base station. Claim 12 also requires a radio installation which (1) divides a frequency band into a plurality of frequency subbands for communication between the radio stations and (2) determines the path to convey information from a first radio station to a second radio station via at least one intermediate radio station.

Elliott et al. uses route request messages, not the radio installation, to determine the route. The Examiner cites Shin for this deficiency. However, column 4, lines 48-62 of Shin simply describe that a mobile switching center ("MSC") 50 (see Fig. 3) determines a communication path in accordance with a communication service required by a mobile station 20. Referring to Fig. 3, the mobile switching center 50 is connected to a public switched telephone network ("PSTN") 100 and the internet 300 via device 60. If the mobile station 20

requires a telephone call, the MSC 50 routes the information to the PSTN 100. If the mobile station 20 requires use of the internet, the MSC 50 routes the information to the device 60. The interfaces Ai and L are completely unrelated to the radio communication links claimed.

Elliott et al. does not even mention the connections of the mobile switching center to the other networks. Applicants fail to see how the references could be combined. Perhaps one of Elliott et al. nodes 100, 102 and 104 would be replaced with MSC 50, PSTN 100 and device 60 from Shin. Needless to say, this modification is useless regarding the features of the claim.

Claims 12 and 28 recite that the base station transmits path information specifying the frequency subband assigned to the link. Because Elliott et al. operates in a completely different manner, there is no description of path information specifying a frequency subband. For this deficiency, the Examiner cites Song. The Examiner asserts Song discloses dividing a frequency subband into a plurality of subbands for communication with the radio stations. Applicants agree that paragraph [0005] of the reference mentions frequency division duplex (FDD) systems and frequency division multiple access (FDMA) systems. If Elliott et al. is modified based on Song, then perhaps the Elliott et al. nodes would communicate using different frequencies.

In summary, the combination of references cited by the Examiner disclose (at most) a FDMA network in which a mobile station can make a phone call or use the internet, with the phone/internet connections being selected by a mobile switching center. The modified Elliott et al. system uses route request messages to discover neighboring nodes. The modified Elliott et al. system is irrelevant to the claimed invention. Accordingly, the prior art rejections should be withdrawn. There being no further outstanding objections or rejections, it is submitted the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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Date: May 16 2011

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